January 2009

DEFENSE LOGISTICS

Lack of Key Information May Impede DOD's Ability to Improve Supply Chain Management

GAO

Accountability ★ Integrity ★ Reliability

		Form Approved OMB No. 0704-0188
	Report Documentation Page	

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

1. REPORT DATE **JAN 2009**	2. REPORT TYPE	3. DATES COVERED **00-00-2009 to 00-00-2009**
4. TITLE AND SUBTITLE **Defense Logistics. Lack of Key Information May Impede DOD's Ability to Improve Supply Chain Management**		5a. CONTRACT NUMBER
		5b. GRANT NUMBER
		5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)		5d. PROJECT NUMBER
		5e. TASK NUMBER
		5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **U.S. Government Accountability Office,441 G Street NW,Washington,DC,20548**		8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSOR/MONITOR'S ACRONYM(S)
		11. SPONSOR/MONITOR'S REPORT NUMBER(S)
12. DISTRIBUTION/AVAILABILITY STATEMENT **Approved for public release; distribution unlimited**		
13. SUPPLEMENTARY NOTES		
14. ABSTRACT		
15. SUBJECT TERMS		

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT **unclassified**	b. ABSTRACT **unclassified**	c. THIS PAGE **unclassified**	**Same as Report (SAR)**	**52**	

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std Z39-18

DEFENSE LOGISTICS

Lack of Key Information May Impede DOD's Ability to Improve Supply Chain Management

Why GAO Did This Study

Military operations in Iraq and Afghanistan have focused attention on the performance of the Department of Defense's (DOD) supply chain management. According to DOD, it spent approximately $178 billion on its supply chain in fiscal year 2007. As a result of weaknesses in DOD's management of its supply chain, this area has been on GAO's list of high-risk federal government programs since 1990. DOD released its Logistics Roadmap in July 2008 to guide, measure, and track logistics improvements. DOD has identified two technologies included in this roadmap, item unique identification (IUID) and passive radio frequency identification (RFID), as having promise to address weaknesses in asset visibility. GAO reviewed (1) the extent to which the roadmap serves as a comprehensive, integrated strategy to improve logistics; and (2) the progress DOD has made implementing IUID and passive RFID. GAO reviewed the roadmap based on DOD statements about its intended purposes and visited sites where IUID and passive RFID were implemented.

What GAO Recommends

GAO recommends that DOD (1) include in its roadmap additional information and elements needed for a comprehensive strategy and (2) collect data associated with the implementation of IUID and passive RFID, analyze their return on investment, and determine if sufficient funding priority has been provided. DOD concurred with GAO's recommendations.

To view the full product, including the scope and methodology, click on GAO-09-150. For more information, contact William M. Solis at (202) 512-8365 or solisw@gao.gov.

What GAO Found

The Logistics Roadmap falls short of meeting DOD's goal to provide a comprehensive and integrated strategy to address logistics problems department-wide. The roadmap documents numerous initiatives and programs that are under way and aligns these with goals and objectives. However, the roadmap lacks key information in three areas necessary for it to be a more useful tool that DOD's senior leaders can use to guide and track logistics improvement efforts toward achieving stated goals and objectives. First, the roadmap does not identify the scope of logistics problems or gaps in logistics capabilities, information that could allow the roadmap to serve as a basis for establishing priorities to improve logistics and address any gaps. Second, the roadmap lacks outcome-based performance measures that would enable DOD to assess and track progress toward meeting stated goals and objectives. Third, DOD has not clearly stated how it intends to integrate the roadmap into DOD's logistics decision-making processes or who within the department is responsible for this integration. DOD officials stated they plan to remedy some of these weaknesses in their follow-on efforts. For instance, DOD has begun to conduct gap assessments for individual objectives in the roadmap and hopes to complete these by July 2009. They stated that they recognized the need for these assessments; however, they had committed to Members of Congress to release the roadmap by the summer of 2008 and were unable to conduct the assessments prior to the release of the roadmap. A comprehensive, integrated strategy that includes these three elements is critical, in part, because of the diffuse organization of DOD logistics, which is spread across multiple DOD components with separate funding and management of logistics resources and systems. Until the roadmap provides a basis for determining priorities and identifying gaps, incorporates performance measures, and is integrated into decision-making processes, it is likely to be of limited use to senior DOD decision makers as they seek to improve supply chain management.

DOD has taken initial steps to implement two technologies included in the Logistics Roadmap–IUID and passive RFID–that enable electronic identification and tracking of equipment and supplies; but has experienced difficulty fully demonstrating return on investment for these technologies to the military components that have primary responsibility for determining how and where these technologies are implemented. Although DOD has undertaken initial implementation efforts of these technologies at several locations, at present, it does not collect data on implementation costs or performance-based outcome measures that would enable the department to quantify the return on investment associated with these two technologies. Without this information, it may be difficult for DOD to gain the support needed from the military components to make significant commitments in funding and staff resources necessary to overcome challenges to widespread implementation of these technologies. As a result, full implementation of these technologies is impeded and the realization of potential benefits to asset visibility DOD expects may be delayed.

_____

United States Government Accountability Office

Contents

January 12, 2009

Congressional Committees

Military operations in Iraq and Afghanistan have focused attention on the performance of the Department of Defense's (DOD) supply chain management in support of deployed U.S. troops. The availability of spare parts and other critical supply items affects the readiness and operational capabilities of U.S. military forces, and the supply chain can be a critical link in determining outcomes on the battlefield. Moreover, the investment of resources in the supply chain is substantial, amounting to approximately $178 billion in fiscal year 2007, according to DOD. As a result of weaknesses in DOD's management of supply inventories and responsiveness to war fighter requirements, supply chain management has been on our list of high-risk federal government programs and operations since 1990. We initially focused on inventory management and later determined that problems extended to other parts of the supply chain, to include requirements forecasting, asset visibility, and materiel distribution.[1]

DOD has worked to resolve supply chain management problems. In 2005, for example, with the encouragement of the Office of Management and Budget (OMB), DOD developed the *DOD Plan for Improvement in the GAO High Risk Area of Supply Chain Management with a Focus on Inventory Management and Distribution*, also known as the Supply Chain Management Improvement Plan, to address some of these systemic weaknesses as a first step toward removing supply chain management from our high-risk list. We stated at the time that DOD's plan was a good first step toward putting DOD on a path toward resolving long-standing supply chain management problems, but that the department faced a number of challenges and risks in fully implementing its proposed changes across the department and measuring progress.[2] In the summer of 2008,

---

[1]GAO, *High-Risk Series: An Update*, GAO-05-207 (Washington, D.C.: Jan. 1, 2005) and *High-Risk Series: An Update*, GAO-07-310 (Washington, D.C.: Jan. 31, 2007).

[2]GAO, *DOD's High-Risk Areas: High-Level Commitment and Oversight Needed for DOD Supply Chain Plan to Succeed*, GAO-06-113T (Washington, D.C.: Oct. 6, 2005) and *DOD's High-Risk Areas: Challenges Remain to Achieving and Demonstrating Progress in Supply Chain Management*, GAO-06-983T (Washington, D.C.: July 25, 2006).

GAO-09-150 Defense Logistics

DOD released its Logistics Roadmap[3] with the intent to develop a more coherent and authoritative framework for guiding, measuring, and tracking DOD's logistics improvement efforts. The roadmap subsumed the Supply Chain Management Improvement Plan. We have previously recommended that DOD improve its ability to guide logistics programs and initiatives across the department and demonstrate the effectiveness, efficiency, and impact of its efforts to resolve supply chain management problems by completing the development of a comprehensive, integrated strategy that is aligned with defense business transformation efforts.[4] DOD concurred with this recommendation.

Asset visibility is an area DOD has focused on in its plans to improve logistics, including its Supply Chain Management Improvement Plan and the recently released Logistics Roadmap. The roadmap describes visibility as answering the questions, "Where is it?", "How will it get here?", and "When will it get here?" Lack of asset visibility increases vulnerability to undetected loss or theft and substantially heightens the risk that millions of dollars will be spent unnecessarily. Furthermore, a lack of visibility potentially compromises cargo security and the readiness of the military. Two of the initiatives included in the Supply Chain Management Improvement Plan and the Logistics Roadmap that focus on improving asset visibility are item unique identification (IUID) and passive radio frequency identification (passive RFID). IUID and passive RFID are technologies for capturing data on individual items or shipments and are sometimes referred to as automatic identification technology (AIT). IUID provides for the marking of individual items with a set of globally unique data elements to help DOD value and track items throughout their life cycle.[5] The passive RFID initiatives provide for the tagging of assets with

---

[3]Office of the Secretary of Defense, Deputy Under Secretary of Defense for Logistics and Materiel Readiness, *Department of Defense Logistics Roadmap* (July 2008).

[4]GAO, *DOD's High-Risk Areas: Progress Made Implementing Supply Chain Management, but Full Extent of Improvement Unknown*, GAO-07-234 (Washington, D.C.: Jan. 17, 2007).

[5]For the purposes of this report, we looked at the implementation of IUID in terms of assigning a unique identifier for an item, marking an item with a data matrix containing that identifier, and registering information about the item and identifier in a database. In discussions with senior DOD officials, they noted that the IUID initiative, in a broader sense, also includes the use of this data to better manage DOD inventory items. While we recognize that DOD could ultimately use this data for a number of purposes, including better inventory management, we are focusing on the technological process of assigning a unique identifier, marking, and registering items as this is the current focus of IUID implementation in the department.

an electronic identification device consisting of a chip and an antenna, usually embedded within a "smart" packaging label, in order to enable electronic tracking of the assets, including the shipping date and the date they are received. Passive RFID tags have no battery; they draw power from the reader, which sends out electromagnetic waves that induce a current in the tag's antenna.[6] DOD has stated that these two AIT initiatives represent critical efforts in support of larger improvements to DOD supply chain management, particularly for improving visibility.

This report addresses DOD's Logistics Roadmap and the status of DOD's implementation of IUID and passive RFID. It was prepared under the authority of the Comptroller General to conduct evaluations at his own initiative and is being addressed to the committees of jurisdiction and to others who have expressed interest in tracking DOD's efforts to improve supply chain management. Additionally, it is part of a body of work we used in our evaluation of DOD supply chain management for our January 2009 high-risk series update. Specifically, this report discusses (1) the extent to which DOD's Logistics Roadmap serves as a comprehensive, integrated strategy to improve DOD logistics and (2) the progress DOD has made implementing IUID and passive RFID.

To assess the Logistics Roadmap, we reviewed guidance, plans, and other documents related to its development. We also interviewed officials from the Office of the Secretary of Defense, Joint Staff, U.S. Transportation Command, U.S. Joint Forces Command, the Defense Logistics Agency (DLA), and the four military services involved in the development of the roadmap. We reviewed DOD statements about the intended purposes of the roadmap that were made at congressional hearings,[7] in discussions with our office, and in the roadmap itself. We also assessed whether the

---

[6]Active RFID tags, which generally use a battery, transmit information through radio signals that are read electronically. Active tags can hold much more data than passive tags and are also more expensive.

[7]Senate Committee on Homeland Security and Governmental Affairs, Subcommittee on Oversight of Government Management, the Federal Workforce and the District of Columbia, *Overview of the DOD Supply Chain and Logistics*, 109th Cong. 2nd Session, 2006, (statement of Alan F. Estevez, Assistant Deputy Under Secretary of Defense (Supply Chain Integration) and Senate Committee on Homeland Security and Governmental Affairs, Subcommittee on Oversight of Government Management, the Federal Workforce and the District of Columbia, 110th Cong. 1st Session, 2007, (statement of Jack Bell, Deputy Under Secretary of Defense (Logistics and Materiel Readiness), General Norton A. Schwartz, Commander, U.S. Transportation Command, and Lieutenant General Robert T. Dail, Director, Defense Logistics Agency).

roadmap incorporated sound strategic planning and transformation management principles based on our prior work.[8] To assess DOD's progress implementing passive RFID and IUID, we reviewed pertinent DOD and military components' guidance, policy, implementation plans, business case analyses, and other documentation related to these technologies. We visited various sites, identified by DOD as locations which have implemented passive RFID and IUID, to observe these technologies in use and to more fully understand their implementation challenges and potential benefits. Additionally, we interviewed officials responsible for the coordination and management of these technologies from the Office of the Secretary of Defense, the four military services, DLA, and U.S. Transportation Command. We also reviewed OMB and DOD guidance on benefit-cost analysis and economic analysis for decision making[9] and assessed the extent to which key principles embodied in this guidance have been applied to DOD's decision making for IUID and passive RFID. Additional information on our scope and methodology is provided in appendix I. We conducted this performance audit from January 2008 to January 2009 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Results in Brief

DOD's Logistics Roadmap falls short of providing a comprehensive, integrated strategy to address logistics problems department-wide and likely will be of limited use to decision makers. The roadmap documents

---

[8]These strategic planning and transformation management principles are discussed in the following reports: GAO, *Defense Logistics: Efforts to Improve Distribution and Supply Support for Joint Military Operations Could Benefit from a Coordinated Management Approach*, GAO-07-807 (Washington, D.C.: June 29, 2007); *DOD's High Risk Areas: Efforts to Improve Supply Chain Can Be Enhanced by Linkage to Outcomes*, *Progress in Transforming Business Operations*, *and Reexamination of Logistics Governance and Strategy*, GAO-07-1064T (Washington, D.C.: July 10, 2007); *Results-Oriented Cultures: Implementation Steps to Assist Mergers and Organizational Transformations*, GAO-03-669 (Washington, D.C.: July 2, 2003); and *Defense Transformation: Clear Leadership, Accountability, and Management Tools Are Needed to Enhance DOD's Efforts to Transform Military Capabilities*, GAO-05-70 (Washington, D.C.: Dec. 17, 2004).

[9]Office of Management and Budget Circular A-94 Revised, *Guidelines for Discount Rates for Benefit-Cost Analysis of Federal Programs* (Oct. 29, 1992) and Department of Defense Instruction 7041.3, *Economic Analysis for Decisionmaking* (Nov. 7, 1995).

numerous initiatives and programs that are under way and aligns these with logistics goals and objectives. DOD officials stated that the roadmap should be of use in helping decision makers as they determine whether current programs and initiatives are sufficient to close any capability gaps that may be identified. However, the roadmap lacks key information in three areas necessary for it to be a more useful tool that DOD senior leaders can use to guide logistics improvements and track progress toward achieving goals and objectives. First, the roadmap does not identify the scope of logistics problems or gaps in logistics capabilities, information that could allow the roadmap to serve as a basis for establishing priorities to improve logistics and address any gaps. For example, the roadmap does not discuss logistics problems that were encountered during operations in Iraq and Afghanistan and how such problems will be addressed. Second, the roadmap lacks outcome-based performance measures that would enable DOD to assess and track progress toward meeting the stated goals and objectives. Our past work has shown that performance measures are critical for demonstrating progress toward achieving results and providing information on which to base organizational and management decisions. Third, DOD has not clearly stated how it intends to integrate the roadmap into its logistics decision-making processes or who within the department is responsible for this integration. For example, DOD has not shown how the roadmap could shape logistics budgets developed by individual DOD components or address joint logistics needs. In our prior work on DOD's transformation efforts, we have emphasized the importance of establishing clear leadership and accountability for achieving transformation results, as well as having a formal mechanism to coordinate and integrate transformation efforts.[10] DOD officials responsible for supply chain integration stated that the roadmap is a first step and that they plan to remedy some of these weaknesses in their follow-on efforts to update the roadmap. For instance, DOD has begun to conduct gap assessments for individual objectives in the roadmap and hopes to complete these by July 2009. DOD stated that it recognized the need for these assessments; however, it had committed to Members of Congress to release the roadmap by the summer of 2008 and was unable to conduct the assessments prior to the release of the roadmap. A comprehensive, integrated strategy that includes these three elements is critical, in part, because of the diffuse organization of DOD logistics, which is spread across multiple DOD components with separate funding and management of logistics resources and systems. As we have previously reported, the

---

[10]GAO-05-70.

organization of DOD's logistics operations complicates DOD's ability to adopt a coordinated and comprehensive approach to joint logistics.[11] Until the roadmap provides a basis for determining priorities and identifying gaps, incorporates performance measures, and is integrated into decision-making processes, it is likely to be of limited use to senior DOD decision makers as they seek to improve supply chain management. Moreover, DOD will have difficulty fully tracking progress toward meeting its goals, from the component to the department level, and provide the visibility needed to fully inform senior decision makers of logistic needs and priorities across the department. We recommend that DOD include in its Logistics Roadmap the elements necessary to have a comprehensive, integrated strategy for improving logistics and clearly state how this strategy will be used within existing decision-making processes.

DOD has taken several steps toward implementing two technologies included in the Logistics Roadmap–IUID and passive RFID–that enable electronic identification and tracking of equipment and supplies, but DOD may face challenges achieving widespread implementation because it is unable to fully demonstrate return on investment associated with these efforts to the military components that have primary responsibility for determining how and where these technologies are implemented. Use of IUID and passive RFID was required by memoranda issued by the Office of the Under Secretary of Defense (Acquisition, Technology, and Logistics) in July 2003 and July 2004,[12] respectively, and during this time senior DOD officials said that both technologies represented critical efforts in support of larger improvements to DOD supply chain management. Since then, the Office of the Under Secretary of Defense, the military services, DLA, and U.S. Transportation Command have developed implementation policy and guidance, established working groups and integrated process teams, allocated and established funding and infrastructure, and conducted pilot projects and initial implementation efforts at several locations. However, full implementation of these technologies is still several years away under current time frames. In addition, DOD does not gather the information needed to fully demonstrate return on investment for IUID and passive

---

[11]GAO-07-807.

[12]Office of the Under Secretary of Defense for Acquisition, Technology and Logistics Memorandum, *Policy for Unique Identification (UID) of Tangible Items—New Equipment, Major Modifications, and Reprocurements of Equipment and Spares* (July 29, 2003) and Office of the Under Secretary of Defense for Acquisition, Technology and Logistics Memorandum, *Radio Frequency Identification (RFID) Policy* (July 30, 2004).

RFID. Both DOD and OMB have established guidance for conducting such analyses. However, DOD does not collect detailed data on implementation costs or performance-based outcome measures from initial implementation efforts that would enable the department to fully quantify the return on investment associated with these two technologies. For example, existing cost estimates for the implementation of IUID and passive RFID do not include funding that the military services and components take from operational accounts to support implementation efforts. Additionally, performance measures are either not being collected or address the status of implementation efforts rather than the effect of implementation. Without the ability to fully demonstrate that the benefits of IUID and passive RFID justify the costs and efforts involved in their implementation, it may be difficult for DOD to gain the support needed from the military components to make the significant commitments in resources necessary to achieve widespread implementation of these technologies. As a result, implementation of these technologies may be impeded and the realization of potential benefits to asset visibility DOD expects may be delayed. Therefore, we recommend that DOD collect detailed information on implementation costs, including costs currently being funded from operational accounts, and performance-based implementation outcomes for current and future implementation efforts from the military components responsible for the implementation of these technologies. Based on this data, DOD should analyze the return on investment to justify expanded implementation efforts, and should determine whether sufficient funding priority has been given to the integration of these technologies into the military components' respective business processes.

In its written comments on a draft of this report, DOD concurred with our recommendations and identified a number of corrective actions it has taken or plans to take. While we believe DOD's actions, for the most part, respond to the issues raised in this report, several questions remain, including both the methodology and time frame for DOD's assessments of the objectives in the roadmap. On the basis of DOD's comments, we have modified our fourth recommendation to specify that DOD collect information on all costs, including costs currently being funded from operational accounts, associated with implementing these two technologies. The department's written comments are reprinted in appendix II.

Background

DOD is one of the largest and most complex organizations in the world to manage effectively. While DOD maintains military forces with unparalleled

capabilities, it continues to confront pervasive, decades-old management problems related to its business operations—which include outdated systems and processes—that support these forces. These management weaknesses cut across all of DOD's major business areas, such as human capital management, including the department's national security personnel system initiative; the personnel security clearance program; support infrastructure management; business systems modernization; financial management; weapon systems acquisition; contract management; and last, but not least, supply chain management. All of these areas are on our high-risk list for DOD.[13]

Supply chain management consists of processes and activities to purchase, produce, and deliver materiel—including ammunition, spare parts, and fuel—to military forces that are highly dispersed and mobile. DOD relies on defense and service logistics agencies to purchase needed items from suppliers using working capital funds. Military units then order items from the logistics agencies and pay for them with annually-appropriated operations and maintenance funds when the requested items—either from inventory or manufacturers—are delivered to the units.

Since 1990, DOD supply chain management (previously, inventory management) has been on our list of high-risk areas needing urgent attention because of long-standing systemic weaknesses that we have identified in our reports. Our high-risk series reports on federal government programs and operations that we have identified, through audits and investigations, as being at high risk due to their greater vulnerabilities to fraud, waste, abuse, and mismanagement. In recent years, we also have identified high-risk areas to focus on the need for broad-based transformations to address major economy, efficiency, or effectiveness challenges. The high-risk series serves to identify and help resolve serious weaknesses in areas that involve substantial resources and provide critical services to the public.

---

[13]GAO-07-310.

DOD Has Taken Actions to Improve Supply Chain Management

DOD has taken a number of steps to improve supply chain management in the past several years, including preparing strategic planning documents and experimenting with a new way to manage its logistics portfolio.[14] In 2005, the Under Secretary of Defense (Acquisition, Technology, and Logistics)[15] released the Focused Logistics Roadmap, which presented an "as-is" compendium of logistics programs and initiatives and provided a baseline for future focused logistics capability analysis and investment within DOD. With the release of the "as-is" roadmap, DOD also identified a need for a future-oriented "to-be" roadmap. DOD released the "to-be" roadmap, now known as the Logistics Roadmap, in July 2008.

In a separate effort, the Deputy Secretary of Defense began, in September 2006, testing a new approach for managing the development of joint capabilities and included joint logistics as a test case. This concept, capability portfolio management, is an effort to manage groups of similar capabilities across the DOD enterprise to improve interoperability, minimize capability redundancies and gaps, and maximize capability effectiveness. In February 2008, the Deputy Secretary of Defense issued a memo[16] formalizing the first four test cases, including joint logistics, and setting out plans for further experimentation with five additional test cases. In that memo, the Under Secretary of Defense (Acquisition, Technology, and Logistics) was designated the capability portfolio management civilian lead for logistics, with U.S. Transportation Command serving as the military lead. According to the memo, the capability portfolio managers will make recommendations to the Deputy Secretary of Defense and the Deputy's Advisory Working Group on capability development issues within their respective portfolio. In addition, the memo states that the capability portfolio managers have no independent decision-making authority and will not infringe on existing statutory authorities. A DOD directive, issued in September 2008, established the policy for using capability portfolio management to advise the Deputy

---

[14]In prior reports, we have noted other DOD actions to resolve supply chain management problems. For our most recent discussion of these actions, see GAO-07-1064T.

[15]The Under Secretary of Defense (Acquisition, Technology, and Logistics) has been designated the Defense Logistics Executive, with overall responsibility for improving and maintaining the Defense Logistics and Global Supply Chain Management System.

[16]Office of the Deputy Secretary of Defense Memorandum, *Capability Portfolio Management Way Ahead* (Feb. 7, 2008).

Secretary of Defense and the Heads of the DOD Components on how to optimize capability investments across the defense enterprise.[17]

DOD Expects IUID and Passive RFID Will Improve Asset Visibility

DOD has identified total asset visibility as a key focus area for improving supply chain management. DOD has defined total asset visibility as the ability to provide timely and accurate information on the location, movement, status and identity of units, personnel, equipment and supplies; and the capability to act on that information to improve the overall performance of DOD logistics practices. We have previously reported on issues associated with DOD's lack of asset visibility.[18] DOD's latest roadmap includes a number of initiatives and programs that involve the implementation of IUID and RFID, two technologies that enable electronic identification and tracking of equipment and supplies and that DOD expects will improve its asset visibility.

DOD's 2007 Enterprise Transition Plan lists IUID and RFID as enablers to achieve the goal of end–to-end materiel visibility in the DOD supply chain.[19] Specifically, the plan states that IUID enables the accurate and timely recording of information on the location, condition, status and identity of appropriate tangible personal property to ensure efficient and effective acquisition, repair, and deployment of items, and states that IUID will contribute to improvements in the responsiveness and reliability of the DOD supply chain. The plan also states that RFID will improve process efficiencies in shipping, receiving, and inventory management, contribute to reductions in cycle time, and increase confidence in the reliability of the DOD supply chain through increased visibility of the location of an item or shipment.

---

[17]Department of Defense Directive 7045.20, *Capability Portfolio Management* (Sept. 25, 2008).

[18]GAO, *Defense Inventory: Improvements Needed in DOD's Implementation of Its Long-Term Strategy for Total Asset Visibility of Its Inventory*, GAO-05-15 (Washington, D.C.: Dec. 6, 2004); *DOD Business Transformation: Lack of an Integrated Strategy Puts the Army's Asset Visibility System Investments at Risk*, GAO-07-860 (Washington, D.C.: July 27, 2007); and *DOD Business Transformation: Air Force's Current Approach Increases Risk That Asset Visibility Goals and Transformation Priorities Will Not Be Achieved*, GAO-08-866 (Washington, D.C.: Aug. 8, 2008).

[19]DOD describes its Enterprise Transition Plan as the roadmap for the department's business transformation. It is organized around six business enterprise priorities, including materiel visibility.

IUID includes the application of a data matrix through direct inscription or placement of a permanent machine-readable label or data plate onto an item. The data matrix contains a set of data elements that form a unique item identifier. This data matrix identifies an individual item distinctly from all other items that DOD buys and owns, similar to the vehicle identification number on a car. Items can be marked either by the vendor before entering into DOD's inventory, or by a DOD component after DOD takes possession of an item. In both cases, information about the item and the mark are uploaded to the IUID Registry, which is located in Battle Creek, Michigan, and managed by the Defense Logistics Agency. The registry serves as the central repository for data about all of the items in the DOD inventory that have been marked with a UID data matrix. Although the registry is intended to contain information about all of the marked items, DOD has issued policy indicating that the registry is not to be used as a property accountability system or to maintain detailed transaction data.[20] As part of its IUID initiative, DOD plans to use this data to more closely track items and more effectively manage its inventory.

In July 2003, DOD directed that all new solicitations and contracts issued on or after January 1, 2004, require the use of IUID for items meeting established criteria.[21] Additionally, in December 2004, the IUID policy was updated to require the application of UID to legacy items (that is, existing personal property items in inventory and operational use).[22] In this memo, DOD requested all program and item managers plan to complete this marking by the end of 2010. The number of items this requirement covers

---

[20]Office of the Under Secretary of Defense for Acquisition, Technology and Logistics Memorandum, *Policy Update for Item Unique Identification of Tangible Personal Property, Including Government Property in the Possession of Contractors* (May 12, 2005).

[21]Office of the Under Secretary of Defense for Acquisition, Technology and Logistics Memorandum, *Policy for Unique Identification (UID) of Tangible Items—New Equipment, Major Modifications, and Reprocurements of Equipment and Spares* (July 29, 2003). These criteria cover all items where (1) unit acquisition cost is $5,000 or more; (2) it is either serially managed, mission essential or controlled inventory piece of equipment or reparable item, or a consumable item or materiel where permanent identification is required; (3) it is a component of a delivered item, if the program manager has determined that unique identification is required; or (4) a UID or a DOD-recognized UID equivalent is available.

[22]Office of the Under Secretary of Defense for Acquisition, Technology and Logistics Memorandum, *Policy for Unique Identification (UID) of Tangible Personal Property Legacy Items in Inventory and Operational Use, Including Government Furnished Property (GFP)* (Dec. 23, 2004).

is unknown. DOD officials estimate it is probably around 100 million; however, they stated the actual number of items could be much higher.

RFID is a data input system that consists of (1) a transponder, generally referred to as a tag; (2) a tag reader, also known as an interrogator, that reads the tag using a radio signal; (3) centralized data processing equipment; and (4) a method of communication between the reader and the computer. The reader sends a signal to the tag, which prompts the tag to respond with information about the item to which it is attached. The information is forwarded to central data processing equipment, which can then be used to get detailed information about the container or item, such as the shipping date or the date received. The information contained in the central data processing equipment can provide visibility over inventory items throughout the supply chain. DOD's RFID policy, issued on July 30, 2004, finalizes business rules for implementing two types of RFID tags— active and passive. This report focuses on DOD's implementation of passive RFID, which is a newer technology than active RFID and less well-established in DOD's supply chain. We previously examined DOD's implementation of passive RFID in September 2005.[23]

A passive RFID tag is an electronic identification device consisting of a chip and an antenna, usually embedded within a "smart" packaging label. Passive RFID tags have no battery; they draw power from the reader, which sends out electromagnetic waves that induce a current in the tag's antenna. Passive RFID readers transmit significant power to activate the passive tags and are not currently approved for use on ammunition, missiles, or other potentially explosive hazards.

Primary responsibility for determining how and where to implement IUID and RFID, as well as funding the implementation and operations of these technologies, resides with DOD components. These costs include the purchase of necessary equipment, costs associated with marking and tagging items, and changes to automated supply systems. In an effort to coordinate the components' efforts to implement various automatic identification technologies, DOD designated U.S. Transportation Command as the lead functional proponent for RFID and related AIT implementation within the DOD supply chain in September 2006. U.S.

---

[23]GAO, *Defense Logistics: Better Strategic Planning Can Help Ensure DOD's Successful Implementation of Passive Radio Frequency Identification*, GAO-05-345 (Washington, D.C.: Sept. 12, 2005).

Transportation Command subsequently published an AIT concept of operations in June 2007 and an implementation plan for this concept of operations in March 2008. Additionally, the Unique Item Identification Policy Office was established in 2002 in the Office of the Under Secretary of Defense (Acquisition, Technology, and Logistics) to develop and implement unified IUID policy across DOD.

DOD's Logistics Roadmap Documents Numerous Initiatives and Programs, but Falls Short of Providing a Comprehensive, Integrated Strategy

Although DOD intended that its Logistics Roadmap would provide a comprehensive and integrated strategy to address logistics problems department-wide,[24] we found that the roadmap falls short of this goal. The roadmap documents numerous initiatives and programs that are under way and organizes these around goals, joint capabilities, and objectives. However, the roadmap lacks three elements necessary in a comprehensive, integrated strategy which would make it a more useful tool for DOD's senior logistics leaders in guiding, measuring, and tracking progress toward achieving DOD logistics goals and objectives—key stated purposes of the roadmap. First, the roadmap does not identify the scope of logistics problems or gaps in logistics capabilities, information that could allow the roadmap to serve as a basis for establishing priorities to improve logistics and address any gaps. Second, the roadmap lacks outcome-based performance measures that would enable DOD to assess and track progress toward meeting stated goals and objectives. Finally, DOD has not clearly stated how it intends to integrate the roadmap into its decision-making processes and who will be responsible for this integration. Without a strategy that provides a basis for determining priorities and identifying gaps, that includes key strategic planning elements, and that is integrated into decision-making processes, DOD will have difficulty guiding, measuring, and tracking progress toward meeting its logistics goals and objectives and providing the visibility needed to fully inform senior decision makers of logistic needs and priorities across the department.

---

[24]Senate Committee on Homeland Security and Governmental Affairs, Subcommittee on Oversight of Government Management, The Federal Workforce and the District of Columbia, *Overview of the DOD Supply Chain and Logistics*, 109th Cong. 2nd Session, 2006 (statement of Alan F. Estevez, Assistant Deputy Under Secretary of Defense (Supply Chain Integration).

Logistics Roadmap Documents Existing Initiatives and Programs

DOD's Logistics Roadmap, released in July 2008, documents numerous initiatives and programs that are under way within the department. The roadmap includes a total of 56 initiatives and 62 programs, based on information submitted by DOD components.[25] According to the data in the roadmap, the total cost of implementing the initiatives and programs from fiscal year 2008 to 2013 is estimated at more than $77 billion. Table 1 summarizes the initiatives and programs by DOD component.

Table 1: Logistics Initiatives and Programs Documented in the Logistics Roadmap

Dollars in millions

DOD component	Initiatives	Programs	Estimated cost (FY08-13)
Air Force	8	10	$32,419
Army	8	37	27,312
Defense Logistics Agency	4	0	836
Marine Corps	4	3	341
Navy	6	10	14,744
Office of the Assistant Deputy Under Secretary of Defense (Maintenance Policy and Programs)	4	0	3
Office of the Assistant Deputy Under Secretary of Defense (Supply Chain Integration)	5	0	647
Office of the Assistant Deputy Under Secretary of Defense (Transportation Policy)	6	0	1
U.S. Joint Forces Command	5	0	27
U.S. Transportation Command	6	2	870
Total	**56**	**62**	**$77,200**

Source: GAO analysis of DOD Logistics Roadmap.

DOD Identified a Need for the Logistics Roadmap in 2005

DOD initially began to develop the Logistics Roadmap in response to direction from the Under Secretary of Defense (Acquisition, Logistics, and Technology) in 2005. In the memorandum accompanying the 2005 Focused Logistics Roadmap, the Under Secretary directed the creation of a follow-on "to be" roadmap. While the Under Secretary recognized that the Focused Logistics Roadmap provided a baseline of programs and

---

[25]The DOD official responsible for coordinating the roadmap stated that there was no defined distinction between initiatives and programs; however, initiatives were generally focused on process improvements, while programs generally dealt with the acquisition of specific items, such as weapons systems.

initiatives for future focused logistics capability analysis and investment and documented significant resource investment in logistics programs and initiatives, he also recognized that the roadmap indicated that key focused logistics capabilities would not be achieved by 2015. As a result, he expected the "to be" roadmap to present credible options for achieving focused logistics capabilities for consideration by the Defense Logistics Board. The "to be" roadmap eventually became the Logistics Roadmap, released in July 2008 by the Deputy Under Secretary of Defense (Logistics and Materiel Readiness). Officials in the Office of the Secretary of Defense (OSD) characterized the "to be" roadmap as an effort to portray where the department was headed in the logistics area, how it would get there, and what progress was being made toward achieving its objectives. Further, they said the roadmap would institutionalize a continuous assessment process linking ongoing capability development, program reviews, and budgeting. DOD officials also testified that the roadmap would include a detailed depiction, over time, of existing, planned, and desired capabilities to effectively project and sustain the joint force.[26] Moreover, they said the roadmap would establish a coherent framework for achieving the best and most cost-effective joint logistics outcomes to support the warfighter. We have emphasized the importance of DOD developing an overarching logistics strategy that will guide the department's logistics planning efforts and have stated that without an overarching logistics strategy, the department will be unable to most economically and efficiently support the needs of the warfighter.

Although DOD originally intended for the roadmap to be issued in February 2007, the department suspended its development while it tested its new capability portfolio management concept. Joint logistics was one of the capability areas included in this test. In November 2007, the Office of Supply Chain Integration, under the direction of the Deputy Under Secretary of Defense (Logistics and Materiel Readiness), began the formal development of the roadmap by coordinating with the military services, combatant commands, the Defense Logistics Agency, and other OSD

---

[26]Senate Committee on Homeland Security and Governmental Affairs, Subcommittee on Oversight of Government Management, the Federal Workforce and the District of Columbia, 110th Cong. 1st Session, 2007 (statement of Jack Bell, Deputy Under Secretary of Defense (Logistics and Materiel Readiness), General Norton A. Schwartz, Commander, U.S. Transportation Command, and Lieutenant General Robert T. Dail, Director, Defense Logistics Agency).

offices to gather information on their logistics initiatives and programs.[27] The initial data call from the Deputy Under Secretary requested that DOD components identify logistics-related initiatives (e.g., RFID and the Single Army Logistics Enterprise) and acquisition programs of record (e.g., C-130J Hercules and Fuel System Supply Point) that are critical to successfully meeting logistics capability needs. The Deputy Under Secretary requested additional information about the initiatives and programs, such as a description, expected benefits and impact, implementation milestones, and resources.

Logistics Roadmap is Organized around Goals, Capabilities, and Objectives

OSD, in presenting information on the department's logistics initiatives and programs, structured the roadmap around three goals, three joint capabilities, and 22 objectives. The objectives in the roadmap are aligned to three logistics goals that were enumerated in DOD's Guidance for Development of the Force, a department-wide strategic planning document that followed the 2006 Quadrennial Defense Review. The three goals are as follows:

- unity of effort – the synchronization and integration of joint, multinational, interagency, and non-governmental logistics capabilities focused on the joint force commander's intent;
- visibility – having assured access to information about logistics processes, resources, and requirements in order to gain the knowledge necessary to make effective decisions; and
- rapid and precise response – the ability to meet the constantly changing logistics needs of the joint force.

---

[27]Officials from the Army, Navy, Air Force, Marine Corps, the Defense Logistics Agency, the U.S. Transportation Command, the U.S. Joint Forces Command, and the Offices of the Assistant Deputy Under Secretaries of Defense for Transportation Policy; Maintenance Plans and Policies; and Supply Chain Integration provided inputs on logistics initiatives and programs.

The objectives are aligned further with three joint capability areas that DOD has identified for joint logistics.[28] These joint capabilities are as follows:

- supply – the ability to identify and select supply sources, schedule deliveries, receive, verify and transfer product, and authorize supplier payments; the ability to see and manage inventory levels, capital assets, business rules, supplier networks and agreements, as well as assessment of supplier performance;
- maintain – the ability to manufacture and retain or restore materiel in a serviceable condition; and
- deployment and distribution – the ability to plan, coordinate, synchronize, and execute force movement and sustainment tasks in support of military operations, including the ability to strategically and operationally move forces and sustainment to the point of need and operate the Joint Deployment and Distribution Enterprise.

The 22 objectives were developed by OSD and each is generally aligned to both a goal and a joint capability, although some objectives are aligned with multiple joint capabilities. OSD provided guidance to the participating DOD components on how to align their initiatives and programs with the objectives.

Table 2 summarizes the organization of the roadmap, including the number of initiatives and programs linked to each objective.

---

[28]In May 2005, the Secretary of Defense directed DOD to begin using common capability definitions, known as joint capability areas or capability portfolios, to describe missions and functional activities performed by the joint force. Joint logistics, one capability portfolio, is defined as the ability to project and sustain a logistically ready joint force through the deliberate sharing of national and multi-national resources to effectively support operations, extend operational reach, and provide the joint force commander the freedom of action necessary to meet mission objectives. In addition to joint logistics' three joint capability areas stated above, the additional capability areas for joint logistics include logistics services, operational contract support, engineering, and force health protection.

Table 2: Organization of the Logistics Roadmap

Goals	Objectives	Joint capability areas			Number of initiatives and programs
		Supply	Maintain	Deployment and distribution	
Unity of effort	Efficient procurement processes	√			9
	Effective procurement processes	√			8
	Align maintenance operations metrics with warfighter outcomes		√		7
	Use commercial transportation resources to the maximum extent practicable, integrated with organic resources			√	16
	Adopt enterprise-wide metrics that promote common goals and interoperability	√	√	√	31
	Develop and implement a DOD Logistics Human Capital Strategic Plan for a competency-based enterprise logistics workforce	√	√	√	3
Visibility	Visibility into customer materiel requirements and available resources to meet those needs	√			26
	Visibility of emerging maintenance workload and in-process resources to meet customer requirements		√		18
	Visibility of in-transit, in-storage, and in-process units and materiel for optimized movement, planning, and execution			√	32
	Implement information technology strategies for improved visibility and interoperability	√	√	√	16
	Enable a single authoritative data set for informed logistics decision making	√	√	√	15
Rapid and precise response	Affordable availability in both peacetime and war	√			28
	Retrograde and disposal processes aligned to department's needs	√			13
	Identify and sustain requisite core maintenance capability		√		10
	Sustain a highly capable, mission-ready maintenance workforce		√		9
	Ensure an adequate infrastructure to execute assigned maintenance workload		√		9
	Continuously improve availability, quality, flow days, and cost of maintenance operations worldwide		√		20
	In conjunction with Systems Engineering, become the advocate for the design and production of reliable weapons systems and equipment		√		9
	Establish a seamless process between deployment and sustainment phases			√	33

Goals	Objectives	Joint capability areas			Number of initiatives and programs
		Supply	Maintain	Deployment and distribution	
	Position stock and warehouses to provide effective and efficient readiness			√	18
	Optimize transportation network			√	46
	Drive acquisition processes to focus on sustainment key performance parameter (KPP) and key system attributes (KSA), as well as implementation of Performance Based Logistics (PBL) strategies	√	√	√	13

Source: GAO analysis of DOD Logistics Roadmap.

Note: Initiatives and programs could be linked to more than one objective.

OSD Intends for the Logistics Roadmap to Initiate New Improvement Efforts

OSD intends for the Logistics Roadmap to serve as a starting point for improvement efforts across the department. In the message from the Deputy Under Secretary of Defense (Logistics and Materiel Readiness), included at the beginning of the roadmap, the Deputy Under Secretary explained that the roadmap initiates the process of defining the department's logistics capability portfolio in terms of initiatives and programs, and documents specific actions under way to achieve logistics goals and supporting objectives, examining them from the perspective of experts who must advise senior leaders. In addition, he stated that the roadmap begins an evolutionary process of linking logistics initiatives and program performance assessments to identifiable and measurable outcomes. Finally, he explained that the roadmap is intended to be part of an ongoing process of assessment and feedback linked to the Quadrennial Defense Review and to the department's Planning, Programming, Budgeting, and Execution cycles, and to be a tool for the DOD logistics community to use in guiding, measuring, and tracking progress of the ongoing transformation of logistics capabilities.

OSD also expects to update and improve the roadmap periodically. The Office of Supply Chain Integration, under the Deputy Under Secretary of Defense (Logistics and Materiel Readiness), stated that an updated roadmap may be completed in the summer of 2009. According to the Deputy Under Secretary's message in the roadmap, future updates to the roadmap will incorporate new initiatives and programs, as well as results from capability-based assessments, joint experiments, and joint technology demonstrations; report progress toward achieving logistics capability performance targets; and help connect capability performance targets to current and planned logistics investment for an overarching view of DOD's progress toward transforming logistics.

Roadmap Lacks Key Elements Needed by Decision Makers to Identify and Address Logistics Problems across DOD

In its current form, the Logistics Roadmap lacks three elements that are needed in order for it to serve as a more useful tool for DOD's senior logistics leaders in guiding, measuring, and tracking progress toward achieving DOD logistics goals and objectives—one of the key stated purposes of the roadmap. Specifically, the roadmap does not identify the scope of DOD logistics problems and capability gaps and lacks outcome-oriented performance measures. Additionally, DOD has not clearly stated how the roadmap will be integrated into its decision-making processes and who will be responsible for this integration. DOD officials stated that they plan to remedy some of these weaknesses in their future efforts to update and expand the roadmap.

Roadmap Does Not Identify Scope of Logistics Problems and Capability Gaps

The Logistics Roadmap does not identify the scope of DOD's logistics problems or gaps in logistics capabilities. In interviews prior to developing the roadmap, DOD officials responsible for the roadmap said that it would identify the scope of DOD's logistics problems and gaps in logistics capabilities. This information, if included, could allow the roadmap to serve as a basis for logistics decision makers to establish priorities for formulating, funding, and implementing corrective actions. However, the current roadmap does not include a discussion about department-wide or DOD component-specific logistics problems. For example, the roadmap does not discuss logistics problems encountered during the ongoing operations in Iraq and Afghanistan. Similarly, while the roadmap links initiatives and programs to three joint capabilities, it does not indicate where there are gaps in either current or desired capabilities. Without addressing the scope of logistics problems and gaps in capabilities, the roadmap's utility is limited and it does not fully inform senior decision makers of the warfighters' logistics needs or provide them with a basis for determining priorities to meet those needs by filling capability gaps.

Addressing logistics capabilities is a core function of the roadmap. For example, according to the roadmap, it initiates the process of defining the department's logistics capability portfolio in terms of initiatives and programs, and provides a foundation for future logistics capability assessments and investment analyses. In addition, the roadmap states that the Guidance for the Development of the Force, from which the roadmap's three goals are drawn, directs DOD to focus on better integrating its logistics capabilities and processes to meet the demands of an emerging operational environment. The roadmap also states that it will allow the department's senior leaders to more effectively advocate for the logistics initiatives and programs most critical for providing globally responsive, operationally precise, and cost-effective logistics support for the warfighter. In addition, DOD officials stated that the roadmap should be of

use in helping decision makers as they determine whether current programs and initiatives are sufficient to close any capability gaps that may be identified.

DOD officials have begun a series of assessments for 3 of the 22 objectives in the roadmap and directed DOD components to develop these assessments to identify capability gaps, shortfalls, and redundancies and to recommend solutions.[29] DOD views such assessments as essential for providing a strategic view of the department's progress toward achieving the goals and objectives of the roadmap. DOD officials said that the results of all 22 of these assessments will be included in the next version of the roadmap, tentatively scheduled for release in the summer of 2009. Until the assessments for each of the 22 objectives are completed, the roadmap will not begin to provide senior decision makers with a basis for determining priorities for developing and maintaining logistics capabilities to support the warfighter.

Roadmap Lacks Outcome-Based Performance Measures

The roadmap lacks outcome-based performance measures that would enable DOD to assess and track progress toward meeting stated goals and objectives. Prior to its development, OSD officials said the roadmap would allow the department to monitor progress toward achieving its logistics objectives, and include specific performance goals, programs, milestones, resources, and metrics to guide improvements in supply chain management and other areas of DOD logistics. Based on interviews with OSD officials prior to the completion of the roadmap, we previously reported that the roadmap would include performance measures and link objective, quantifiable, and measurable performance targets to outcomes and logistics capabilities. However, we found that the roadmap does not include outcome-based performance measures of the objectives, which would allow DOD to measure progress toward meeting these stated objectives. While many of the individual initiatives include performance goals or implementation milestones, the objectives lack such measures. We also found that although the objectives were categorized by DOD-wide logistics goals, they were not linked to those goals with performance or

---

[29]The three objectives for which assessments have begun are (1) effective procurement processes; (2) visibility of in-transit, in-storage, and in-process units and materiel for optimized movement planning and execution; and (3) identify and sustain requisite core maintenance capability. The Deputy Under Secretary of Defense (Logistics and Materiel Readiness) assigned the following three components, respectively, to lead each assessment: Defense Logistics Agency, U.S. Transportation Command, and Assistant Deputy Under Secretary of Defense (Maintenance Policy and Programs).

cost metrics. The lack of outcome-based performance measures makes it difficult to measure progress on how the objectives are meeting the stated goals.

An official from the Office of Supply Chain Integration, responsible for leading the development of the roadmap, stated that performance measures or assessments of the objectives to measure progress were not included in this version of the roadmap because of a tight schedule for its completion and release. As noted previously, DOD decided to delay development of the roadmap until the capability portfolio management test cases had been completed; however, they had committed to Members of Congress that the roadmap would be released by the summer of 2008. Within this time frame, officials said they were unable to address performance measures or assessments. They stated that future versions of the roadmap will include these elements, and assessments to measure progress toward achieving 3 of the 22 objectives were ongoing at the time we conducted our audit work. In October 2008, we requested descriptions of the assessment approach and methodology; however, the DOD official coordinating the assessments indicated that the assessments were a work in progress and the approach had not been finalized.

We have emphasized the importance of performance measures as management tools for all levels of an agency, including the program or project level, to track an agency's progress toward achieving goals, and to provide information on which to base organizational and management decisions. In a previous review of the Supply Chain Management Improvement plan, we found that many of the initiatives in the plan, as well as the three focus areas these initiatives were to address, lacked outcome-focused performance measures, limiting DOD's ability to fully demonstrate the results achieved through its plan. We also found that the plan lacked cost metrics that might show efficiencies gained through these supply chain improvement efforts, either at the initiative level or overall. Without outcome-focused performance measures and cost metrics, DOD is unable to fully track progress toward meeting its goals for improving logistics from the component to the department level, limiting the department's ability to fully demonstrate results achieved through the roadmap. Increasing DOD's focus on measurable outcomes will enable the department's internal and external stakeholders, including OMB and Congress, to track the interim and long-term success of its initiatives and help DOD determine if it is meeting its goals of achieving more effective and efficient supply chain management. Performance metrics are critical for demonstrating progress toward achieving results and providing information on which to base organizational and management decisions.

Inadequate information on performance may be an impediment to improving program efficiency and effectiveness.

Roadmap Has Not Been Integrated into Decision-Making Processes

DOD has not clearly stated how it intends to integrate the roadmap into its decision-making processes and who will be responsible for this integration. For example, DOD has not shown how the roadmap could shape logistics budgets developed by individual DOD components or address joint logistics needs through the new capability portfolio management process. According to the Deputy Under Secretary's message at the beginning of the roadmap, the document will be part of on ongoing assessment and feedback process linked to the Quadrennial Defense Review and the Planning, Programming, Budgeting, and Execution cycles and will support senior leader decision making in a constrained resource environment. However, on the basis of our review, we found that DOD has not clearly stated the manner in which the roadmap will be formally or informally used within these processes, how it will be used to inform senior decision makers, and who will be responsible for its implementation. In our prior work on DOD's transformation efforts, we have emphasized the importance of establishing clear leadership and accountability for achieving transformation results, as well as having a formal mechanism to coordinate and integrate transformation efforts.[30] In the absence of clear leadership, accountability, and a formal implementation mechanism, DOD may have difficulty in resolving differences among competing priorities, directing resources to the highest priorities, and ensuring progress if changes in senior personnel occur.

DOD officials explained that procedures for how DOD officials use the roadmap within these existing processes have not been formalized, but provided various scenarios in which the assessments associated with the roadmap's objectives could possibly be used. They stated that upon completion of the assessments for the individual objectives, the assessments could be inserted into program and budget reviews, and could be used to inform the development of future versions of the Quadrennial Defense Review and the Guidance for the Development of the Force. Additionally, an official with the Office of Supply Chain Integration responsible for leading the development of the roadmap stated the assessments could be incorporated into DOD's budget process to document the current status of initiatives and programs, and could aid in identifying redundancies across DOD. DOD officials have stated various

---

[30]GAO-05-70.

ways in which the roadmap and its associated assessments could be useful to senior decision makers, but they have not clearly defined how the products will be used to inform the Quadrennial Defense Review, Guidance for the Development of the Force, and the budget process.

Some DOD component officials who participated in the development of the roadmap said it could be useful in the capability portfolio management process. However, DOD officials stated that because capability portfolio management was still new and had not been formalized at the time the roadmap was under development, they were not sure how it would be implemented and how or if the roadmap could be useful in this process. As mentioned previously, the roadmap defines the logistics portfolio and in light of the recent formalization of the joint logistics capability portfolio, the roadmap could serve as the starting point to assist the capability portfolio managers with their responsibilities. The capability portfolio managers for joint logistics, the Under Secretary of Defense (Acquisition, Technology and Logistics) and the Commander, U.S. Transportation Command, are responsible for providing recommendations or advice to appropriate DOD decision makers and forums regarding integration, coordination, and synchronization of capability requirements for capability investments, and for evaluating capability demand against resource constraints, identifying and assessing risks, and suggesting capability trade-offs within their portfolio to the heads of the DOD components. Given that capability portfolio management has been recently formalized, it remains to be seen how the capability portfolio managers will implement the process and what types of information they will need to fulfill their responsibilities.

A comprehensive integrated strategy to address logistics problems department-wide is critical, in part, because of the diffuse organization of DOD logistics. Responsibility for logistics within DOD is spread across multiple components with separate funding and management of logistics resources and systems. For example, the Under Secretary of Defense (Acquisition, Technology and Logistics), as part of OSD, serves as the principal staff element of the Secretary of Defense in the exercise of policy development, planning, resource management, fiscal, and program evaluation responsibilities. The Secretary of Defense designated the Under Secretary of Defense as the department's Defense Logistics Executive with authority to address logistics and supply chain issues. However, each of the military services is separately organized under its own secretary and functions under the authority, direction, and control of the Secretary of Defense. The secretaries of the military departments are responsible for organizing, training, and equipping their forces under Title 10 of the United

States Code. DOD policy states that each of the secretaries is directed to prepare and submit budgets for their respective departments, justifying before the Congress budget requests, as approved by the President; and to administer the funds made available for maintaining, equipping, and training their forces.[31] As we have previously reported, the diffuse organization of DOD's logistics operations complicates DOD's ability to adopt a coordinated and comprehensive approach to joint logistics.[32] Until the roadmap provides a basis for determining priorities and identifying gaps, incorporates performance measures, and is integrated into decision-making processes, it is likely to be of limited use, beyond the current processes and information available, to senior DOD decision makers as they seek to improve supply chain management.

DOD May Face Challenges Achieving Widespread Implementation of IUID and Passive RFID

DOD has taken several steps toward implementing IUID and passive RFID but may face challenges achieving widespread implementation because it is unable to fully demonstrate the return on investment associated with these efforts to the military components that have primary responsibility for determining how and where these technologies are implemented. DOD and its military components have made some progress adopting these two technologies. These efforts include developing policy and guidance, establishing working groups and integrated process teams to share information and lessons learned both within and across the military components, providing funding to support implementation, and establishing pilot projects and initial implementation efforts at several locations. Despite these signs of progress, full implementation of IUID and passive RFID is still several years away under current time frames. At present, DOD is not able to fully quantify the return on investment associated with these technologies because it does not uniformly collect complete information on both the costs and benefits associated with implementing IUID and passive RFID. Additionally, effective integration of these technologies with supply chain processes and information systems is challenging and will require the military components to make significant commitments of funding and staff resources. Without the ability to fully demonstrate that the benefits of IUID and passive RFID justify the costs and efforts involved, DOD is likely to face difficulty gaining the support

---

[31]Department of Defense Directive 5100.1, *Functions of the Department of Defense and Its Major Components* (Washington, D.C., Aug. 1, 2002).

[32]GAO-07-807.

needed from the military components to overcome challenges associated
with implementation.

DOD Efforts to Implement IUID and Passive RFID Include Issuing Guidance, Sharing Information, Allocating Resources, and Conducting Pilot Projects

DOD and its military components have taken several steps to facilitate,
support, and undertake the implementation of IUID and passive RFID. Use
of IUID and passive RFID was required by memoranda issued by the Office
of the Under Secretary of Defense (Acquisition, Technology, and Logistics)
in July 2003 and July 2004, respectively, and DOD and its military
components have periodically issued policy and guidance to manage and
inform users regarding the implementation of both technologies. For
example, U.S. Transportation Command, the lead functional proponent for
the implementation of AIT, including IUID and passive RFID, released an
AIT Concept of Operations (CONOPS) in June 2007 and an AIT
Implementation Plan in March 2008.[33] The CONOPS and Implementation
Plan provide information on DOD's future vision for AIT use across the
supply chain and are intended to establish a baseline standard for AIT use
and implementation throughout DOD. Guidance on these technologies has
also been published by DOD. For example, DOD has provided guidance
concerning the use of IUID to support improved maintenance and materiel
management processes, as well as detailed information on the technology
and the mechanics of its implementation.[34]

DOD has taken other actions to support and facilitate the implementation
of IUID and passive RFID. DOD established a UID Policy Office and
designated staff resources toward RFID implementation in the Office of
Supply Chain Integration. In addition to helping disseminate policy and
guidance, the two offices play a role in promoting the technologies and
educating the military components regarding implementation. For
example, the offices have established Web sites for suppliers, program
managers, and others involved in implementation efforts to access

---

[33]United States Transportation Command, *Department of Defense Automatic
Identification Technology Concept of Operations for Supply and Distribution Operations*
(June 11, 2007) and *Department of Defense Automatic Identification Technology
Implementation Plan for Supply and Distribution Operations* (March 2008).

[34]Assistant Deputy Under Secretary of Defense for Materiel Readiness and Maintenance
Policy, *The Concept of Operations for IUID-Enabled Maintenance in Support of DOD
Materiel Readiness* (Jan. 2007) and Office of the Deputy Under Secretary of Defense
(Acquisition, Technology and Logistics) *The Department of Defense Guide to Uniquely
Identifying Items: Assuring Valuation, Accountability and Control of Government
Property*, version 2.0 (Oct. 1, 2008).

information on the technologies, including specifications and requirements, tutorials and trainings, guidance for implementation, and updates to existing policy and guidance. Additionally, the UID Policy Office holds biannual UID Forums to provide practical guidance to help educate military program managers and DOD contractors regarding IUID implementation, and the Supply Chain Integration Office holds annual RFID summits to highlight best practices across the department and provide a forum for discussion of RFID technologies and their potential applications to supply chain management.

In addition to guidance developed at the department level, the military components are developing service-specific implementation plans for IUID and passive RFID. As of October 2008, the Army had issued a service-wide strategy for IUID implementation, and the Marine Corps and Air Force had both completed draft IUID implementation plans. While the Navy does not have a formal service-wide IUID implementation plan, a Navy official responsible for managing IUID implementation stated its draft serialized item management[35] implementation plan contains information pertaining to DOD IUID guidance and requirements. For passive RFID, the Navy and Air Force had completed plans for implementation of the technology, the Army had completed a draft implementation plan, and the Marine Corps was in the process of updating its existing RFID implementation plan to incorporate information from the DOD AIT CONOPS.

Efforts to implement the technologies also include information sharing across DOD and within its military components. DOD and its military components have established integrated process teams and working groups to define objectives and establish implementation timelines, identify common implementation challenges and potential solutions, and facilitate stakeholder communications. These teams focus on several areas related to implementation and operate both within and across the military components. For example, U.S. Transportation Command formed multiple integrated process teams dedicated to different segments of supply and distribution operations during the development of its AIT Implementation Plan, which encompasses both IUID and passive RFID. Additionally, the UID Policy Office has established and participated in a number of working groups to support the development and implementation of IUID policy.

---

[35]Serialized item management is the management of a specific item relative to its exact conditions, requirements, and circumstances for the purposes of improving materiel readiness.

Integrated process teams and working groups also operate within the military components. For example, in September 2007, the Navy formed an IUID integrated process team whose four working groups meet monthly to discuss metrics for measuring implementation progress, technical solutions for implementation challenges, process mapping of implementation efforts, and internal and external communications regarding implementation. In December 2007, the Army also formed an IUID integrated process team, which developed the Army-wide implementation strategy for IUID and continues to meet to share lessons learned and discuss challenges related to implementation.

The military components, DLA, and U.S. Transportation Command have funded implementation of both IUID and passive RFID through various mechanisms and to varying degrees. For instance, the Army funds AIT, which includes both IUID and passive RFID, through its regular budget process. Army officials estimated that, in fiscal years 2007 and 2008, the Army has spent $22.5 million on the implementation of IUID and has requested an additional $15 million per year for fiscal years 2009 through 2013. For passive RFID, Army officials estimated that the Army spent $2.2 million between the third quarters of fiscal year 2006 and 2008. Other services, however, do not uniformly provide designated funding for implementation. For example, Navy officials stated that implementation of IUID within the Navy is an unfunded mandate and funding for implementation must be taken out of operational budgets. Air Force officials also stated that funding for implementation is taken out of operational budgets by program managers. Additionally, DLA and U.S. Transportation Command funded a project that spanned multiple military components.

Pilot projects and initial implementation efforts for both IUID and passive RFID are under way at multiple locations throughout the military components. Table 3 lists examples of pilot projects and initial implementations that DOD officials identified as important ongoing efforts.

Table 3: Examples of DOD's IUID and Passive RFID Pilot Projects and Initial Implementations (as of September 2008)

	IUID or passive RFID	Component	Location	Description
Robotic Systems Joint Project Office – Joint Robot Repair Fielding Division	IUID	Army/Marine Corps	14 Joint Robot Repair Fielding Centers (both CONUS and OCONUS locations)	Assign and apply unique item identifiers to all inventory and integrate their use into maintenance operations.
Aviation and Missile Command – Integrated Materiel Management Center	IUID	Army	Redstone Army Arsenal, Huntsville, Ala.	Facilitate data management of IUID implementation throughout the command.
Space and Naval Warfare Systems Command – Extremely High Frequency Lab	IUID	Navy	San Diego, Calif.	Assign and apply unique item identifiers to inventory for use in inventory management.
Alaska RFID Implementation Project	Passive RFID	DLA/Army/Air Force/U.S. Transportation Command	San Joaquin DDC, Calif.; Travis AFB, Calif.; Fort Richardson, Alaska; Elmendorf AFB, Alaska	Replicate full supply process using passive RFID. Apply passive RFID tags to shipments and track and receive shipments with passive RFID technology.
Naval Supply Systems Command — Bangor RFID Evaluation	Passive RFID	Navy/DLA	Naval Base Kitsap, Bangor, Wash.	Receive shipments from San Joaquin and Susquehanna Defense Distribution Centers tagged with passive RFID technology and accompanying advanced shipping notices.
Defense Distribution Centers	Passive RFID	DLA	All 17 CONUS Defense Distribution Centers, as well as those on Hawaii and Guam	Enable Defense Distribution Centers to read passive RFID tags attached to shipments received from suppliers and to apply passive RFID tags on shipments to DOD activities and units

Source: GAO analysis.

The implementation efforts listed in the table vary in scope, in terms of both the number of components and installations involved and the amount of resources required for full implementation. For example, the Alaska RFID Implementation project, which aimed to test and evaluate passive RFID within the DOD supply chain in order to streamline supply chain operations, spanned multiple military components and cost more than $27 million to implement.[36] As a part of this pilot, passive RFID infrastructure was installed at DLA, Army, and Air Force locations in Alaska and California. Other implementation efforts, however, have been smaller and

---

[36]This total included $7.88 million in fiscal year 2005, $11.48 million in fiscal year 2006, and $8 million in fiscal year 2007.

less resource intensive. For instance, the Robotic Systems Joint Project Office, which works to procure, field, sustain, and support ground robotics for the Army and the Marine Corps, implemented IUID at its Joint Robot Repair Fielding division at a cost of approximately $400,000 during fiscal years 2007 and 2008. The project office established a process for marking new acquisitions to its inventory with item unique identifiers and, to maximize the benefits of implementation, integrated IUID into its existing supply chain management data system.

Full Implementation of IUID and Passive RFID Remains Several Years Away

Full implementation of IUID and passive RFID remains several years away under current time frames. Although DOD initially projected that all items currently in its inventory required to be marked under IUID guidance would be marked with unique item identifiers by fiscal year 2010, officials stated that this target will not be met. According to DOD officials, as of October 2008 approximately 4 percent of the estimated 100 million items currently in DOD inventory have been marked with item unique identifiers. DOD officials stated that, at the current pace of implementation, full marking of legacy items will take many additional years. For example, the Air Force estimates that it will take until fiscal year 2021 to complete marking parts already in inventory with item unique identifiers. Since 2005, Air Force officials estimated that the Air Force has marked 10,000 items in its inventory while the total number of Air Force items required to be marked exceeds 12.5 million.

The DOD AIT Implementation Plan estimates that the implementation of technologies, including passive RFID will be completed in 2015; however, current time frames indicate that it may take longer to fully implement the technology. Initial pilots of passive RFID called for in the DOD AIT Implementation Plan are under way at selected locations in each military service, but a DOD official responsible for coordinating passive RFID implementation across the department stated that the services are still in the process of gathering baseline information and the technology will not be fully functional at these locations until the end of fiscal year 2009. Additionally, according to the DOD AIT Implementation Plan, updated automatic information systems needed to support passive RFID and IUID may not be functional until after 2015. Updates to these systems are necessary in order for the components to derive benefit from these initiatives. Furthermore, while infrastructure for reading passive RFID tags is in place in multiple locations throughout the military components, additional work is required to reach full implementation. According to a September 2008 report by the DOD Inspector General on DLA's implementation of passive RFID, 10 percent of supply contracts examined

did not contain the required RFID clause and suppliers for 43 percent of contracts containing the required clause did not apply passive RFID tags to shipments they sent to depots.[37] The Inspector General also found that installation-level understanding of the use and application of passive RFID was limited and additional training was needed to increase awareness of the technology and its application.

DOD Does Not Collect Information Needed to Fully Demonstrate Return on Investment for IUID and Passive RFID

Although implementation of IUID and passive RFID will require significant funding commitments and staff resources from the military components, DOD does not gather the cost and performance information needed to fully demonstrate return on investment for the technologies to the military components that have primary responsibility for determining how and where these technologies are implemented. While DOD gathers information on some of the costs associated with implementation, cost estimates do not include all of the funding or staff resources provided by the services to support implementation because funding for implementation at the component level is frequently taken out of operational accounts, rather than being directly allocated. The March 2008 DOD AIT Implementation Plan identified $744 million in programmed AIT-related funding for fiscal years 2008 through 2013, but does not include in its estimate funding that the military components take from operational accounts to support implementation efforts. A 2005 memo from the Under Secretary of Defense (Acquisition, Technology, and Logistics) requires acquisition programs to specifically identify funding for IUID in budget submissions.[38] However, several officials from the military services stated that they divert resources from other efforts in order to facilitate implementation of IUID and passive RFID. Navy officials stated that implementation of IUID within the Navy is treated as an unfunded mandate and program managers at the installation level must take funding out of operational budgets in order to support implementation efforts. Army officials have faced similar challenges. For example, program managers involved in the Army's implementation of IUID for small arms have had to release staff from other tasks to assist in the marking of weapons with item unique identifiers. Since funding and staff resources

---

[37]United States Inspector General, Department of Defense, *Requiring Radio Frequency Identification in Contracts for Supplies*, D-2008-135 (Sept. 2008).

[38]Office of the Under Secretary of Defense for Acquisition, Technology and Logistics Memorandum, *Budget Instructions for Unique Identification (UID) Implementation FY 2007-2012* (May 11, 2005).

are often provided in this indirect manner, the total resources expended on the implementation of IUID and passive RFID may not be visible to decision makers, both at the component level and across DOD.

Additionally, DOD does not require the military components to gather or report on outcome-based performance measures to demonstrate the extent to which benefits are being accrued through the implementation of IUID and passive RFID. While DOD does gather some information to assess implementation efforts across the military components, the information collected focuses on measures of implementation progress and does not include outcome-based performance measures. For example, while OSD and the military components are required to provide updates to DOD at quarterly IUID Scorecard Reviews, reporting requirements focus on the execution of implementation plans rather than benefits accrued from implementation. At the July 2008 scorecard review, military components provided installation-level implementation plan status updates and reported on implementation efforts, such as issuance of new policies and outreach activities. Furthermore, while U.S. Transportation Command's AIT Implementation Plan identifies potential performance measures for automatic identification technologies and establishes a schedule to begin collecting some data in 2009, the military components have not yet been required to collect or report information pertaining to these metrics.[39] Senior DOD officials involved in the implementation of passive RFID stated that they plan to collect this information in the future.

During our site visits, officials at some locations were able to describe qualitative benefits derived from the implementation of IUID or passive RFID. However, the officials had not quantified the benefits they had observed. For instance, Army officials cited a number of benefits from the implementation of IUID by the Robotic Systems Joint Project Office. These included reductions in inventory size, shipping and receiving time, and data entry errors and increases in data quality, robustness, and processing speed. However, officials stated that they had not attempted to quantify these benefits. Other officials cited installation-level qualitative benefits for implementing passive RFID. For example, officials from DLA's Defense Distribution Center in San Joaquin, California, said the implementation of passive RFID reduced the amount of time needed to prepare shipments. However, they lacked key data to quantify the extent

---

[39]Examples of these metrics are customer wait time, arrival to receipt time, and RFID tag read rate.

of the time savings. Additionally, only limited efforts have been made to gather the baseline information needed to quantify change in performance outcomes over time. For instance, DLA gathered baseline information on shipping and receiving operations at the Defense Distribution Center in San Joaquin in September 2008, despite beginning its implementation of passive RFID in November 2004.

Without data on the costs and benefits associated with the technologies, it is difficult for DOD to create a business case or other analysis that would fully demonstrate return on investment from implementing IUID and passive RFID to the military components. Both OMB and DOD have established guidance for conducting such analyses. The stated goal of OMB Circular A-94 is to promote efficient resource allocation through well-informed decision making by the federal government, and the circular provides general guidance on comparing the costs of alternative means of achieving the same objective or stream of benefits. Additionally, according to DOD Instruction 7041.3, economic analyses are an integral part of the planning, programming and budgeting system of the department, and economic analysis calculations should include information on the costs and benefits associated with alternatives under consideration.

While OSD and the military components have conducted some studies to assess the business case for the use of IUID and passive RFID, these studies have had mixed results. For example, a June 2008 analysis of alternatives for AIT in base-level Air Force supply and distribution processes found that implementation of the RFID vision presented in the DOD AIT CONOPS was not optimal, based on the costs and benefits associated with implementation. Instead, the Air Force determined that its current state of operations, with limited incorporation of passive RFID, functioned both effectively and efficiently. Broader analyses of return on investment, however, have arrived at different results. DOD released a business case analysis of passive RFID in April 2005 that projected overall cost savings from implementation of passive RFID would range from $70 million to $1.781 billion over a 6-year period and found that there is a reasonable to good expectation that implementation of passive RFID across DOD will provide an economic return on investment in the near term and an excellent expectation of economic returns in the long term. Additionally, a March 2005 cost benefit analysis of IUID performed by OSD found that implementation of the technology would deliver benefits in both the short and long terms. However, these department-wide business case analyses for both technologies have been characterized by DOD officials involved in the coordination and management of IUID and passive RFID as overly broad and unconvincing because analyses have been

largely based on data from private industry implementation efforts. DOD officials stated that the April 2005 DOD business case analysis for passive RFID and the March 2005 DOD IUID business case analysis were both high-level efforts that were discounted by the military components for overstating potential benefits of the technologies, as well as the time frame in which those benefits would be achieved.

In 2005, we identified unclear return on investment as an impediment to the implementation of passive RFID.[40] This impediment remains today. Since return on investment for both IUID and passive RFID is not always clear to the military components charged with their implementation, it is difficult for DOD to convince program managers at the installation level to invest time and resources toward overcoming challenges associated with implementing the technologies at the expense of other competing priorities. For example, officials from both the Army and the Navy who have responsibility for coordinating and managing implementation of these technologies in their respective components stated that implementation of IUID is given low priority by program managers, who do not see the benefits associated with implementation. DOD officials agreed that program managers resist implementation of the technologies when the value of implementation is unclear. In our previous work on supply chain management, we have stated that it is important for the Office of the Secretary of Defense to obtain the necessary resource commitments from the military services, DLA, and other organizations, such as U.S. Transportation Command, to ensure that initiatives are properly supported.[41] At present, DOD's inability to fully quantify return on investment has impeded implementation progress, as the military components charged with carrying out implementation are unable to clearly discern the benefits of the technologies and are reluctant to devote time and resources for implementation, rather than for competing priorities.

Effective integration of these technologies with supply chain processes and information systems is challenging and requires the military components to make significant commitments of funding and staff resources, often without promise of short-term benefit. As noted previously, DOD identified $744 million in programmed funding that will be necessary in fiscal years 2008 through 2013 to achieve the vision laid

---

[40]GAO-05-345.

[41]See GAO-06-113T.

out in the AIT Implementation Plan. Military service officials stated that tasks required to achieve full implementation include installation of infrastructure and training of personnel to understand and use the technologies. Additionally, costly and complex business process changes are necessary for the military components to enable interoperability between automatic information systems used to gather data from IUID marks and passive RFID tags and service-specific supply data systems.

Without these changes, data gathered through IUID and passive RFID cannot be accessed to derive benefit from the technologies. In some cases, data are not being gathered at all. Officials at three out of four locations participating in the implementation of the Alaska RFID Implementation Project stated they derive no benefit yet from passive RFID as a result of the lack of integration between RFID data collection platforms and supply chain information systems. Deriving benefit from IUID implementation has also been difficult. Officials from multiple military components stated that while IUID marking efforts are time consuming and resource intensive, lack of data system integration prevents implementation benefits from being realized.

Without a clear return on investment, achieving the integration necessary to derive benefit from the technologies may be resource intensive to a degree that discourages the military components from investing in technology solutions. For instance, faced with a lack of information system interoperability, the Army decided against investing in technologies that would allow its legacy supply systems to use IUID and passive RFID data. Instead, the Army decided to delay obtaining benefit from the technologies for multiple years until Army-wide information systems that can directly communicate with one another are operational. Army officials stated that the costs associated with implementing an interim solution were prohibitive, given the uncertain return on investment for the technologies in the near term.

Conclusions

The importance of supply chain management to the operational capability of U.S. forces, as well as the considerable resources being spent in this area, highlight the importance of addressing long-standing problems that have resulted in our designation of this DOD function as a high-risk area. Given the diffuse organization of DOD's logistics operations, senior DOD decision makers need a comprehensive, integrated strategy to guide the department's efforts to make significant improvements. Although DOD's Logistics Roadmap represents the latest attempt to establish such a strategy for the department, the lack of key elements we identified in our

review calls into question the utility of this roadmap in addressing supply chain problems. Further, without the inclusion of these key elements, it will be difficult for DOD to demonstrate progress in addressing these problems and provide Congress with assurance that the DOD supply chain achieves DOD's goal of providing cost-effective joint logistics support for the war fighter. Therefore, it will be important that DOD officials follow through on their intent to remedy weaknesses in the roadmap.

Although incorporating IUID and passive RFID into the DOD supply chain offers the promise of technologies that may be able to help address long-standing problems of inadequate asset visibility, the department is unable to fully quantify the return on investment associated with the technologies to those in the military components responsible for implementation. Cost and benefit information collected from actual implementation efforts could form the basis for quantifying return on investment and help to encourage the military components to allocate resources that will be needed for widespread implementation of these technologies. Until the military components place higher priority on integration of IUID and passive RFID into their business processes, DOD will not realize the benefits it expects to achieve from these initiatives.

Recommendations for Executive Action

To improve DOD's ability to guide logistics initiatives and programs across the department and to demonstrate the effectiveness, efficiency, and impact of its efforts to resolve supply chain management problems, we recommend that the Secretary of Defense direct the Under Secretary of Defense (Acquisition, Technology, and Logistics) take the following three actions necessary to have a comprehensive, integrated strategy for improving logistics:

- Identify the scope of logistics problems and capability gaps to be addressed through the Logistics Roadmap and associated efforts.
- Develop, implement, and monitor outcome-focused performance measures to assess progress toward achieving the roadmap's objectives and goals.
- Document specifically how the roadmap will be used within the department's decision-making processes used to govern and fund logistics and who will be responsible for its implementation.

To improve the likelihood DOD will achieve the potential benefits it expects from the implementation of IUID and passive RFID, we recommend that the Secretary of Defense direct the Under Secretary of

Defense (Acquisition, Technology, and Logistics), in conjunction with the military components, take the following two actions:

- Collect detailed information on the costs, including costs currently being funded from operational accounts, and performance outcomes for ongoing and future implementation of these two technologies.
- On the basis of these data, develop an analysis or analyses of the return on investment to justify expanded investment of resources in the implementation of the technologies.

We also recommend that the Secretary of Defense direct the Secretaries of the Army, the Navy, and the Air Force; the Commandant of the Marine Corps; and the Director of the Defense Logistics Agency to determine, on the basis of the above analysis or analyses, whether sufficient funding priority has been given to the integration of these technologies into their respective business processes and, if not, to take appropriate corrective action.

Agency Comments and Our Evaluation

In its written comments on a draft of this report, DOD concurred with our recommendations and identified a number of corrective actions it has taken or plans to take. While we believe DOD's actions, for the most part, respond to the issues raised in this report, several questions remain, including both the methodology and time frame for DOD's assessments of the objectives in the roadmap. On the basis of DOD's comments, we have modified our fourth recommendation to specify that DOD collect information on all costs, including costs currently being funded from operational accounts, associated with implementing these two technologies. The department's written comments are reprinted in appendix II.

DOD concurred with our three recommendations focused on improving its Logistics Roadmap and cited actions to address the recommendations. DOD stated that the roadmap is a living document and the department continues progressing toward developing a more coherent and authoritative framework for guiding its logistics improvement efforts. Specifically, DOD stated that it has completed an initial review of three of the roadmap's objectives as the framework for finalizing an assessment methodology. This initial review is intended to identify gaps, shortfalls, timing issues, and challenges throughout DOD's supply chain. DOD also stated that, in addition to monitoring existing performance metrics, such as customer wait time, the department will determine which specific outcome-based performance measures can be linked to each of the

objectives and goals within the roadmap. Finally, DOD stated that it has established an executive advisory committee to ensure that the roadmap is a useful tool in decision making. Our report describes the ongoing assessment effort that DOD cites in its comments. Although DOD did not provide a time frame for completing these assessments, DOD officials have previously stated that they tentatively expect to have all 22 assessments completed for the next iteration of the roadmap in July 2009. Because DOD was not able to provide information on its assessment methodology, we could not determine whether these assessments are likely to address the information gaps we identified in the current roadmap regarding the scope of DOD's logistics problems and capability gaps; nor could we determine the extent that these assessments might result in outcome-oriented performance measures that would enable DOD to assess progress toward achieving the roadmap's goals and objectives. DOD's decision to form an executive advisory committee appears to be a positive step. However, it remains unclear at this time how the roadmap will be integrated within the department's existing decision-making processes used to govern and fund logistics; therefore, DOD will need to take additional steps to clarify how it intends to use the roadmap.

DOD also concurred with our three recommendations aimed at improving the likelihood that the department will achieve the potential benefits it expects from implementing IUID and passive RFID. DOD cited a number of efforts to identify and collect performance metrics for IUID and passive RFID and to analyze this information to justify the expanded investment of resources in their implementation. DOD further stated it will review the services' Program Objective Memorandum inputs to ensure that, based on the department's AIT investment plan, sufficient funding priority is given to integrating these technologies into their respective business processes. Our review indicated that much work remains for DOD to collect complete and useful performance data. Additionally, DOD did not indicate plans to gather additional cost information pertaining to the implementation of IUID and passive RFID. We continue to believe that cost information associated with the implementation of these technologies is important to any analysis of return on investment. As we noted in the report, some funding for the implementation of IUID and passive RFID is being taken out of operational accounts. Current POM information may not provide a complete picture of the costs associated with the implementation of IUID and passive RFID. Therefore, DOD should gather detailed information on the full costs associated with the implementation of both IUID and passive RFID, including those funded from operational accounts. We have modified our recommendation accordingly.

We are sending copies of this report to interested congressional committees; the Secretary of Defense; the Secretaries of the Army, the Navy, and the Air Force; the Commandant of the U.S. Marine Corps; the Commander of U.S. Transportation Command; the Director of the Defense Logistics Agency; and the Director, Office of Management and Budget. This report will also be available at no charge on GAO's Web site at http://www.gao.gov.

If you or your staffs have questions concerning this report, please contact me at (202) 512-8365 or solisw@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributions to this report are listed in appendix III.

William M. Solis
Director, Defense Capabilities and Management

List of Congressional Committees

The Honorable Carl Levin
Chairman
The Honorable John McCain
Ranking Member
Committee on Armed Services
United States Senate

The Honorable Ike Skelton
Chairman
The Honorable Duncan Hunter
Ranking Member
Committee on Armed Services
House of Representatives

The Honorable Daniel K. Akaka
Chairman
The Honorable George V. Voinovich
Ranking Member
Subcommittee on Oversight of Government Management,
   the Federal Workforce, and the District of Columbia
Committee on Homeland Security and Governmental Affairs
United States Senate

The Honorable John P. Murtha
Chairman
Subcommittee on Defense
Committee on Appropriations
House of Representatives

Appendix I: Scope and Methodology

To determine the extent to which the Department of Defense's (DOD) July 2008 Logistics Roadmap serves as a comprehensive, integrated strategy to improve DOD logistics, we reviewed its content and organization, as well as documents relating to its development, including DOD guidance to the components regarding submitting information and reviewing draft copies of the roadmap. We also reviewed memoranda directing components to conduct assessments for specific objectives included in the roadmap. We reviewed prior DOD logistics strategies and plans, including the 2005 Focused Logistics Roadmap and the DOD Plan for Improvement in the GAO High Risk Area of Supply Chain Management with a Focus on Inventory Management and Distribution, as well as other DOD strategic plans such as the Enterprise Transition Plan and the Quadrennial Defense Review. We reviewed DOD statements about the intended purposes of the roadmap that were made in congressional hearings, in discussions with our office conducted during prior GAO work in this area, and in the roadmap itself. We identified sound management principles based on prior work evaluating strategic planning efforts and performance assessments.[1] We obtained information on DOD's logistics capabilities portfolio management test case by reviewing DOD guidance and interviewing officials within the Office of the Joint Chiefs of Staff, who were responsible for managing the test case for joint logistics. We interviewed officials from DOD components submitting information for the roadmap, including the Army, Navy, Air Force, Marine Corps, the Defense Logistics Agency, the U.S. Transportation Command, the U.S. Joint Forces Command, and the Offices of the Assistant Deputy Under Secretaries of Defense for Supply Chain Integration, Transportation Policy, and Maintenance Policy and Programs. Over the course of these interviews, we obtained pertinent information and perspectives on the roadmap, efforts to compile and review the information included in the roadmap, and potential uses of the roadmap for logistics decision making.

To obtain information on the progress DOD has made implementing item unique identification (IUID) and passive radio frequency identification (RFID), we reviewed DOD's overall concept of operations and implementation plan for automatic identification technology, which includes IUID and passive RFID. We obtained briefing documents describing the status of IUID and passive RFID implementation. We obtained and reviewed various service-level implementation plans for IUID and RFID; however, because the majority of these plans were only

---

[1]GAO-03-669, GAO-05-70, GAO-07-807, and GAO-07-1064T.

recently released or in draft form, we did not evaluate the adequacy of these service-level plans. We also reviewed Office of Management and Budget (OMB) and DOD guidance on benefit-cost analysis and economic analysis for decision making.[2] We visited and conducted interviews with officials involved in the coordination and management of these technologies within the Office of the Secretary of Defense (OSD), Defense Logistics Agency (DLA), the U.S. Transportation Command, and the military services. Additionally, we visited and observed the use of passive RFID technology at DLA's Defense Distribution Center in San Joaquin, California; Travis Air Force Base, California; and the Naval Base Kitsap in Bangor, Washington. We also visited and observed the use of IUID at the Robotic Systems Joint Project Office and the Army Aviation and Missile Command, Alabama. We also interviewed officials at the following locations involved in implementing either IUID or passive RFID: Anniston Army Depot, Alabama; Army Project Manager Soldier Weapons, New Jersey; Navy Extremely High Frequency Satellite Communications Branch, California; Naval Air Systems Command, Maryland; Elmendorf Air Force Base, Alaska; Fort Richardson, Alaska; and Air Mobility Command, Illinois. We also interviewed officials responsible for managing the IUID registry in Battle Creek, Michigan. We also interviewed officials in the DOD Inspector General's Office to review concurrent work that office is conducting on passive RFID.

We conducted this performance audit from January 2008 through January 2009 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

---

[2]Office of Management and Budget Circular A-94 Revised, *Guidelines for Discount Rates for Benefit-Cost Analysis of Federal Programs* (Oct. 29, 1992) and Department of Defense Instruction 7041.3, *Economic Analysis for Decisionmaking* (Nov. 7, 1995).

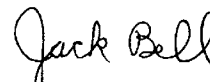# Appendix II: Comments from the Department of Defense

DEC 1 9 2008

Mr. William M. Solis
Director, Defense Capabilities and Management
U.S. Government Accountability Office
441 G Street, N.W.
Washington, DC 20548

Dear Mr. Solis,

This is the Department of Defense (DoD) response to the Government Accountability Office (GAO) draft report, GAO-09-150, "DEFENSE LOGISTICS: Lack of Key Information May Impede DoD's Ability to Improve Supply Chain Management," dated November 21, 2008 (GAO Code 351156). The GAO draft report provides DoD with Logistics Roadmap recommendations that support developing a more comprehensive, integrated strategy for improving logistics. In the report, GAO also recommends that the DoD take actions to achieve potential benefits from the implementation of Item Unique Identification and passive Radio Frequency Identification. The Department concurs with all six recommendations.

Detailed comments on the draft report recommendations are included in the enclosure. The DoD appreciates the opportunity to comment on the report.

Jack Bell

Enclosure:
As stated

**GAO DRAFT REPORT – Dated November 21, 2008
GAO CODE 351156/GAO-09-150**

**"DEFENSE LOGISTICS: Lack of Key Information May
Impede DoD's Ability to Improve Supply Chain Management"**

**DEPARTMENT OF DEFENSE COMMENTS
TO THE RECOMMENDATIONS**

RECOMMENDATION 1: The GAO recommends that the Secretary of Defense
direct the Under Secretary of Defense for Acquisition, Technology and Logistics to
identify the scope of logistics problems and capability gaps to be addressed through the
Logistics Roadmap and associated efforts.

DoD RESPONSE: Concur. Department of Defense (DoD) has recognized the need to
identify the scope of logistics problems and gaps in the Roadmap. Since August 2008,
DoD has been diligently working to finalize the Roadmap's assessment phase. The
Department has completed an initial review of three objectives as the framework for
finalizing an assessment methodology that will lead to successful outcomes. This initial
review is laying the framework for the way ahead. The assessment process will identify
gaps, shortfalls, timing issues and challenges throughout the DoD supply chain. It is
important to note that the 2008 DoD Logistics Roadmap is a living document. Multiple
sections of the product were published in July 2008, but the project continues
progressing towards developing a more coherent and authoritative framework for
guiding the Department's logistics improvement efforts.

RECOMMENDATION 2: The GAO recommends that the Secretary of Defense
direct the Under Secretary of Defense for Acquisition, Technology and Logistics to
develop, monitor, and implement outcome-focused performance measures to assess
progress toward achieving the roadmap's objectives and goals.

DoD RESPONSE: Concur. DoD has developed and is monitoring outcome-focused
performance metrics, such as Customer Wait Time, at various levels of the supply
chain. Additionally, metrics have been developed based on the Supply Chain
Operations Reference Model, such as Perfect Order Fulfillment; though not all of these
metrics can be fully collected across the DoD until modernized systems have been
implemented. As part of the Roadmap assessment process that started in August 2008,
Supply, Maintenance, Deployment, and Distribution managers have been tasked to
determine which specific outcome performance metrics can be linked to each of the
objectives and goals within the Roadmap in order to assess progress toward achieving
desired results.

RECOMMENDATION 3: The GAO recommends that the Secretary of Defense direct the Under Secretary of Defense for Acquisition, Technology and Logistics to document specifically how the roadmap will be used within the Department's decision-making processes used to govern and fund logistics and who will be responsible for its implementation.

DoD RESPONSE: Concur. DoD has established a joint Executive Advisory Committee made up of senior leaders responsible for implementing logistics programs, and initiatives. The committee will guide the Roadmap process to ensure it is a useful tool in decision-making.

RECOMMENDATION 4: The GAO recommends that the Secretary of Defense direct the Under Secretary of Defense for Acquisition, Technology and Logistics, in conjunction with the Military Components, to collect detailed information on the costs and performance outcomes for ongoing and future implementation of the Item Unique Identification (IUID) and passive Radio Frequency Identification (RFID) technologies.

DOD RESPONSE: Concur. IUID complements RFID as a foundational element of Materiel Visibility and is a critical enabler for DoD's progress toward Serialized Item Management (SIM). Per DoD IUID and SIM policies and implementing guidance, Military Components are currently preparing detailed IUID and SIM implementation plans based on the cost and projected benefits of marking, tracking and managing discrete items over their lifecycle. SIM plans highlighting projected outcomes of IUID investment are to be forwarded to Deputy Under Secretary of Defense (DUSD) for Logistics and Materiel Readiness (L&MR) by the Military Components in January 2009. Additionally, DoD tracks IUID implementation and key programmatic metrics via quarterly IUID Scorecard reviews chaired by Deputy Under Secretary of Defense for Acquisition and Technology. For RFID, the DoD Automatic Identification Technology (AIT) Stakeholders agree that a critical step is to capture the "As Is" and the "To Be" performance of the supply chain on current and future implementations of RFID. Toward that end, the baseline "As Is" measurements were captured for the business processes identified in the AIT Implementation Plan. The stakeholders will then collect the "To Be" performance outcomes following implementation of the new AIT technologies in September 2009.

RECOMMENDATION 5: The GAO recommends that the Secretary of Defense direct the Under Secretary of Defense for Acquisition, Technology and Logistics, in conjunction with the Military Components, to develop an analysis or analyses of the return on investment to justify expanded investment of resources in the implementation of the item unique identification (IUID) and passive radio frequency identification (RFID) technologies.

DoD RESPONSE: Concur. For IUID, the multi-Service SIM Working Group developed and issued guidance on developing the IUID/SIM return on investment analysis in January 2008. As SIM Plans are submitted to DUSD (L&MR) for review beginning in January 2009, DoD will be able to analyze and justify expanded investment of resources in the implementation of IUID technologies and processes. For RFID, the DoD AIT Stakeholders agree that a critical step is to capture the "As Is" and the "To Be" performance of the supply chain before and after the application of new AIT technology in order to justify the investment of resources on AIT. Toward that end, the baseline "As Is" measurements were captured for the business processes identified in the AIT Implementation Plan. The stakeholders will then collect the "To Be" performance outcomes following implementation of the new AIT technologies in September 2009 to justify expanded investment of resources.

RECOMMENDATION 6: The GAO recommends that the Secretary of Defense direct the Secretaries of the Army, the Navy, and the Air Force; the Commandant of the Marine Corps; and the Director of the Defense Logistics Agency to determine, on the basis of the above analysis or analyses, whether sufficient funding priority has been given to integration of these technologies into their respective business processes and, if not, to take appropriate corrective action.

DoD RESPONSE: Concur. For IUID, Military Components IUID/SIM budget requirements will be forwarded in SIM Plan submittals beginning in January 2009. Subsequently, Service-level Program Objective Memorandum (POM) inputs will be reviewed to ensure that a sufficient funding priority has been provided to implement IUID technologies and processes in order to achieve stated IUID/SIM outcome based objectives. For RFID, the DoD AIT Stakeholders recognize that it is very important to synchronize the expenditures on AIT. The DoD AIT synchronization integrated process team was established to help guide and synchronize the Services, Defense Logistics Agency (DLA), and U.S. Transportation Command's (USTRANSCOM) efforts to incorporate new AIT technology for Transportation and Distribution. The DoD AIT Implementation Plan Global Team collected Program Objective Memorandum (POM) inputs from each of the Services and DLA to provide a comprehensive view of the investment plan for implementing AIT as specified in the plan. As the Services, DLA, and USTRANSCOM complete the actions for Spiral 1 of the DoD AIT Implementation Plan for Transportation and Distribution at the end of September 2009, the Global Team will validate these findings against the POM funding to ensure sufficient funding priority has been given to the integration of these technologies into their respective business processes.

Appendix III: GAO Contact and Staff Acknowledgments

GAO Contact

William M. Solis, (202) 512-8365 or solisw@gao.gov

Staff Acknowledgments

In addition to the contact named above, Tom Gosling (Assistant Director), Grace Coleman, Nicole Harms, Brooke Leary, Andrew McGuire, Paulina Reaves, and Ben Thompson made significant contributions to this report.

GAO's Mission	The Government Accountability Office, the audit, evaluation, and investigative arm of Congress, exists to support Congress in meeting its constitutional responsibilities and to help improve the performance and accountability of the federal government for the American people. GAO examines the use of public funds; evaluates federal programs and policies; and provides analyses, recommendations, and other assistance to help Congress make informed oversight, policy, and funding decisions. GAO's commitment to good government is reflected in its core values of accountability, integrity, and reliability.
Obtaining Copies of GAO Reports and Testimony	The fastest and easiest way to obtain copies of GAO documents at no cost is through GAO's Web site (www.gao.gov). Each weekday afternoon, GAO posts on its Web site newly released reports, testimony, and correspondence. To have GAO e-mail you a list of newly posted products, go to www.gao.gov and select "E-mail Updates."
Order by Phone	The price of each GAO publication reflects GAO's actual cost of production and distribution and depends on the number of pages in the publication and whether the publication is printed in color or black and white. Pricing and ordering information is posted on GAO's Web site, http://www.gao.gov/ordering.htm. Place orders by calling (202) 512-6000, toll free (866) 801-7077, or TDD (202) 512-2537. Orders may be paid for using American Express, Discover Card, MasterCard, Visa, check, or money order. Call for additional information.
To Report Fraud, Waste, and Abuse in Federal Programs	Contact: Web site: www.gao.gov/fraudnet/fraudnet.htm E-mail: fraudnet@gao.gov Automated answering system: (800) 424-5454 or (202) 512-7470
Congressional Relations	Ralph Dawn, Managing Director, dawnr@gao.gov, (202) 512-4400 U.S. Government Accountability Office, 441 G Street NW, Room 7125 Washington, DC 20548
Public Affairs	Chuck Young, Managing Director, youngc1@gao.gov, (202) 512-4800 U.S. Government Accountability Office, 441 G Street NW, Room 7149 Washington, DC 20548